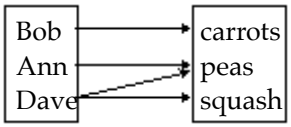
Review for Exam 1

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the relation represents a function. If it is a function, state the domain and range.

1) 1) _____



A) function
domain: {carrots, peas, squash}
range: {Bob, Ann, Dave}

B) function
domain: {Bob, Ann, Dave}
range: {carrots, peas, squash}

C) not a function

2) {(–3, 7), (0, 5), (5, –3), (6, –1)} 2) _____

A) function
domain: {–3, 0, 5, 6}
range: {7, 5, –3, –1}

B) function
domain: {7, 5, –3, –1}
range: {–3, 0, 5, 6}

C) not a function

3) {(11, –4), (–5, –3), (–5, 0), (4, 3), (20, 5)} 3) _____

A) function
domain: {11, 4, –5, 20}
range: {–4, –3, 0, 3, 5}

B) function
domain: {–4, –3, 0, 3, 5}
range: {11, 4, –5, 20}

C) not a function

Determine whether the equation defines y as a function of x.

4) $x + 3y = 3$ 4) _____

A) function

B) not a function

Determine whether the equation defines y as a function of x.

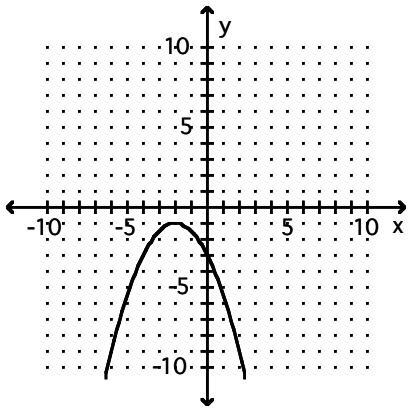
5) $x^2 + y^2 = 25$ 5) _____

A) y is a function of x

B) y is not a function of x

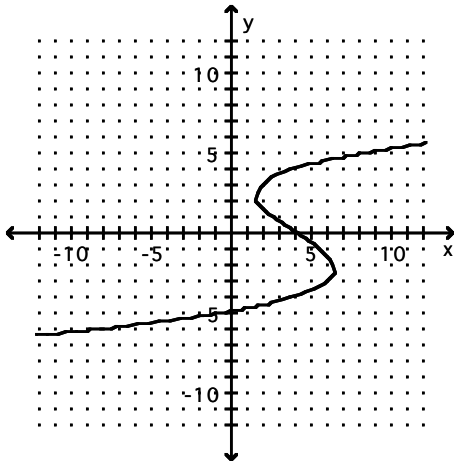
Decide whether the relation defines a function.

6) 6) _____



A) Function B) Not a function

7) 7) _____



A) Not a function B) Function

8) Student Test Score 8) _____

Name	Test Score
Bob L.	76
Susan H.	83
Jim H.	76
Bruce B.	96

A) Function B) Not a function

Find the value for the function.

9) Find f(–1) when $f(x) = x^2 + 3x - 7$. 9) _____

A) 11 B) –9 C) 5 D) –3

10) Find f(–x) when $f(x) = 3x^2 - 3x - 1$. 10) _____

A) $3x^2 + 3x - 1$ B) $-3x^2 + 3x + 1$ C) $3x^2 + 3x + 1$ D) $-3x^2 + 3x - 1$

11) Find f(–1) when $f(x) = \frac{x^2 - 8}{x + 3}$. 11) _____

A) $\frac{9}{4}$ B) $\frac{1}{2}$ C) $\frac{9}{2}$ D) $-\frac{7}{2}$

12) Find f(–9) when $f(x) = |x| - 6$. 12) _____

A) –15 B) –3 C) 3 D) 15

13) Find f(–x) when $f(x) = \frac{x}{x^2 + 6}$. 13) _____

A) $\frac{-x}{-x^2 + 6}$ B) $\frac{-x}{x^2 + 6}$ C) $\frac{-x}{x^2 - 6}$ D) $\frac{x}{-x^2 + 6}$

14) Find f(–x) when $f(x) = -2x^2 + 5x - 4$. 14) _____

A) $2x^2 - 5x + 4$ B) $-2x^2 - 5x + 4$ C) $-2x^2 - 5x - 4$ D) $2x^2 - 5x - 4$

15) Find f(2x) when $f(x) = \sqrt{2x^2 - 3x}$. 15) _____

A) $\sqrt{4x^2 - 6x}$ B) $2\sqrt{2x^2 - 3x}$ C) $\sqrt{8x^2 - 6x}$ D) $\sqrt{4x^2 - 12x}$

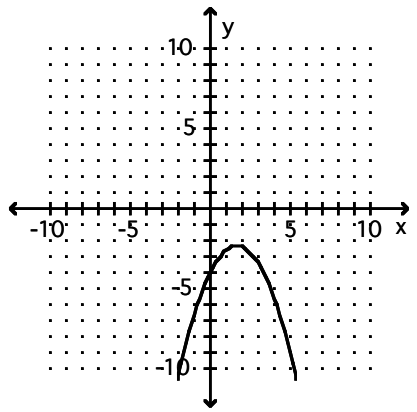
16) Find f(x + h) when $f(x) = -3x^2 + 3x - 2$. 16) _____

A) $-3x^2 - 6xh - 3h^2 + 3x + 3h - 2$ B) $-3x^2 - 3xh - 3h^2 + 3x + 3h - 2$

C) $-3x^2 - 3h^2 + 3x + 3h - 2$ D) $-3x^2 - 3h^2 - 3x - 3h - 2$

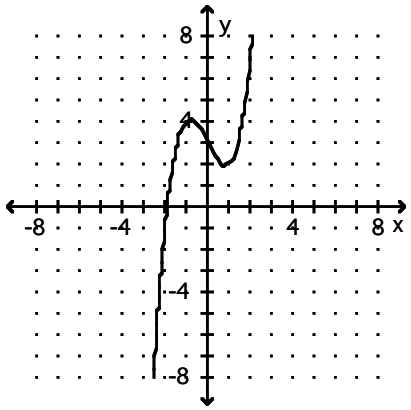
Using the horizontal–line test, determine whether the function is one–to–one.

17) 17) _____



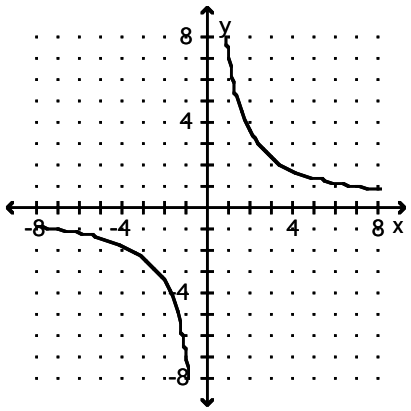
A) one–to–one B) not one–to–one

18) 18) _____



A) one-to-one B) not one-to-one

19) 19) _____



A) one-to-one B) not one-to-one

Find the domain of the function.

20) $f(x) = \frac{x}{x - 1}$ 20) _____

A) $(-\infty, 0)$ B) $(0, \infty)$
C) $(-\infty, -1) \cup (-1, \infty)$ D) $(-\infty, 1) \cup (1, \infty)$

21) $f(x) = \frac{6}{x + 3}$ 21) _____

A) $(-\infty, 0) \cup (0, \infty)$ B) $(-\infty, -3) \cup (-3, \infty)$
C) $(-\infty, 3)$ D) $(-\infty, \infty)$

22) $g(x) = \frac{3x}{x^2 - 49}$ 22) _____

A) $\{x \mid x \neq -7, 7\}$ B) all real numbers
C) $\{x \mid x > 49\}$ D) $\{x \mid x \neq 0\}$

23) $f(x) = \sqrt{14 - x}$ 23) _____

A) $\{x \mid x \leq \sqrt{14}\}$ B) $\{x \mid x \leq 14\}$ C) $\{x \mid x \neq \sqrt{14}\}$ D) $\{x \mid x \neq 14\}$

24) $\frac{x}{\sqrt{x-5}}$ 24) _____

A) $\{x \mid x \geq 5\}$
B) $\{x \mid x > 5\}$
C) all real numbers
D) $\{x \mid x \neq 5\}$

25) $f(x) = \frac{1}{x^2 + 5x - 14}$ 25) _____

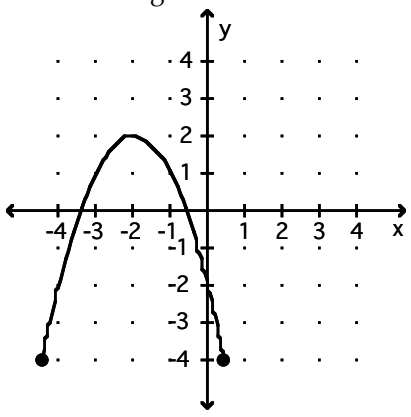
A) $(-\infty, \infty)$
B) $(-\infty, -7) \cup (-7, 2) \cup (2, \infty)$
C) $(-\infty, 2) \cup (2, \infty)$
D) $(-\infty, -7) \cup (-7, \infty)$

26) $f(x) = \frac{x^2}{x^2 + 4}$ 26) _____

A) $\{x \mid x \neq -4\}$
B) $\{x \mid x > -4\}$
C) $\{x \mid x \neq 0\}$
D) all real numbers

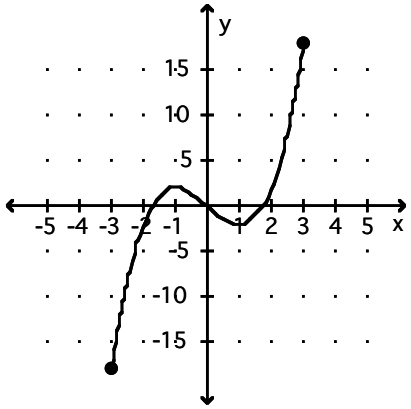
For the function represented in the graph, determine the domain or range, as requested.

27) Find the range. 27) _____



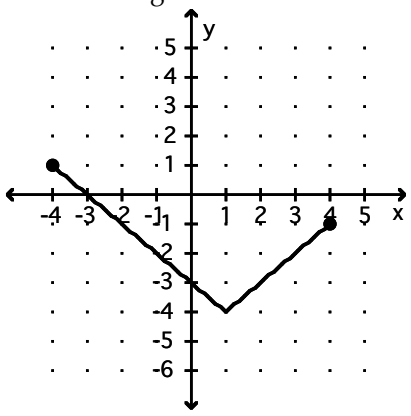
A) [–4, 2]
B) [–4.45, 0.45]
C) [–2, 2]
D) [–5, 5]

28) Find the domain. 28) _____



A) [–5, 5]
B) [–18, 18]
C) all real numbers
D) [–3, 3]

29) Find the range. 29) _____



A) {–5, –4, –3, –2, –1, 0, 1, 2, 3, 4, 5} B) [–1, 1]
C) [–4, 1] D) [1, –1]

Find the requested value.

30) f(–4) for $f(x) = \begin{cases} 4x, & \text{if } x \le -1 \\ x - 3, & \text{if } x > -1 \end{cases}$ 30) _____

A) –7 B) –16 C) 1 D) 16

31) f(2) for $f(x) = \begin{cases} 5x + 1, & \text{if } x < 1 \\ 2x, & \text{if } 2 \le x \le 7 \\ 2 - 6x, & \text{if } x > 7 \end{cases}$ 31) _____

A) –10 B) 43 C) 4 D) 6

Evaluate the piecewise function at the given value of the independent variable.

32) $g(x) = \begin{cases} \dfrac{x^2 - 8}{x - 6} & \text{if } x \ne 6 \\ x - 3 & \text{if } x = 6 \end{cases}$; g(5) 32) _____

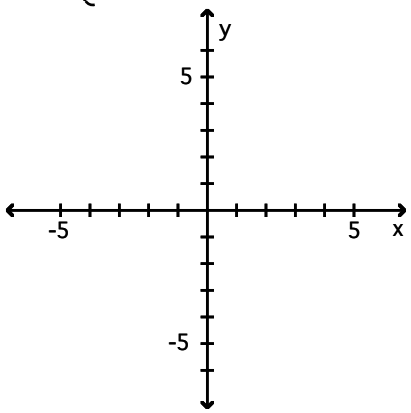
A) 2 B) 3 C) – 17 D) 5

33) $f(x) = \begin{cases} x + 2 & \text{if } x > -2 \\ -(x + 2) & \text{if } x \le -2 \end{cases}$; f(–6) 33) _____

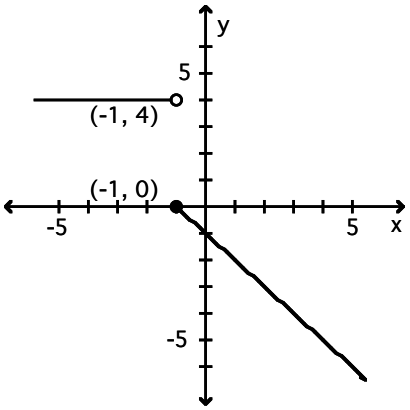
A) 18 B) –6 C) –4 D) 4

Graph the function.

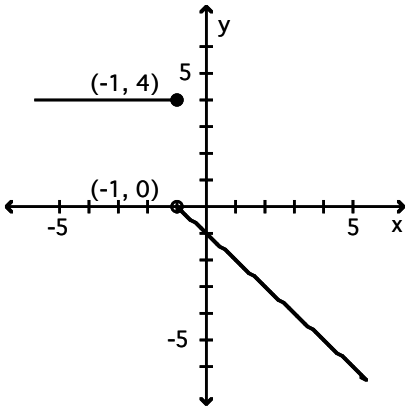
34) $f(x) = \begin{cases} x - 1 & \text{if } x < 1 \\ 4 & \text{if } x \ge 1 \end{cases}$ 34) _____



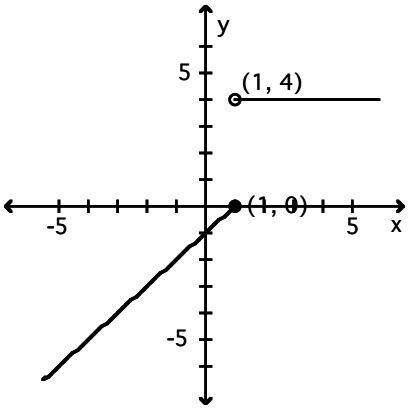
A)



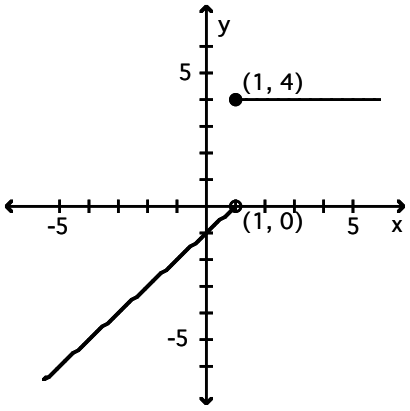
B)



C)



D)



Find the average rate of change for the function between the given values.

35) $f(x) = -4x + 8$; from 1 to 2 35) _____

A) −4 B) 8 C) 4 D) −8

36) $f(x) = x^2 + 1x$; from 4 to 9 36) _____

A) $\frac{70}{9}$ B) 18 C) 10 D) 14

37) $f(x) = \sqrt{2x - 1}$; from 1 to 5 37) _____

A) −2 B) $-\frac{1}{6}$ C) $\frac{1}{2}$ D) −28

Suppose that a ball is rolling down a ramp. The distance traveled by the ball is given by the function s(t), where t is the time, in seconds, after the ball is released, and s(t) is measured in feet. For the given function, find the ball's average velocity from t_1 to t_2.

38) $s(t) = 9t^2$; $t_1 = 4$ to $t_2 = 5$ 38) _____

A) 9 ft/sec B) 81 ft/sec C) 225 ft/sec D) 162 ft/sec

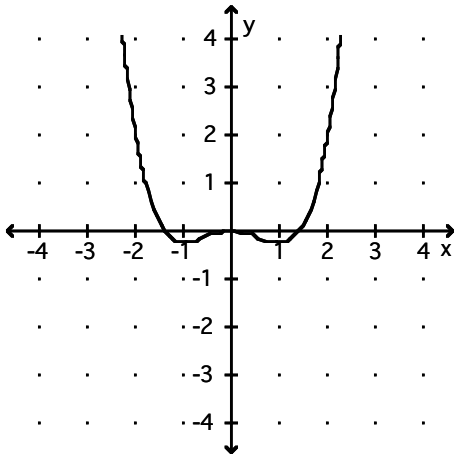
Solve the problem.

39) A deep sea diving bell is being lowered at a constant rate. After 10 minutes, the bell is at a depth of 500 ft. After 40 minutes the bell is at a depth of 1600 ft. What is the average rate of lowering per minute? Round to the nearest hundredth as needed. 39) _____

A) 27.50 ft per minute
B) 40.00 ft per minute
C) 36.67 ft per minute
D) 0.03 ft per minute

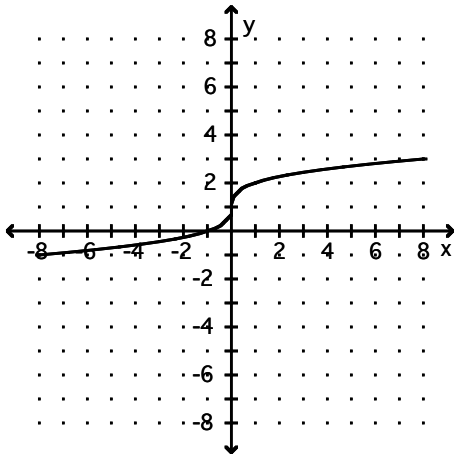
Use the graph of f to determine the intervals where f is increasing and where f is decreasing.

40) 40) _____



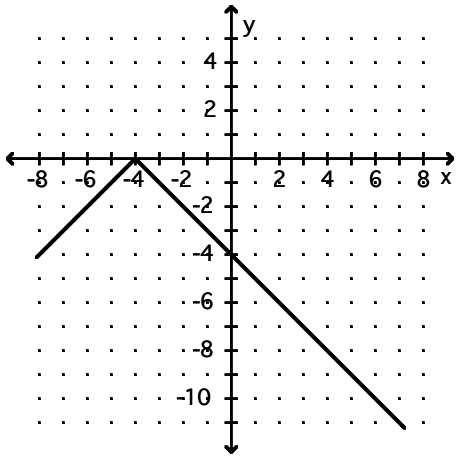
A) increasing: [–1, ∞); decreasing: (–∞, –1]
B) increasing: [–1, 1]; decreasing: (–∞, –1] ∪ [1, ∞)
C) increasing: [0, ∞); decreasing: (–∞, 0]
D) increasing: [–1, 0] ∪ [1, ∞); decreasing: (–∞, –1] ∪ [0, 1]

41) 41) _____



A) increasing: (–∞, 0]; decreasing [0, ∞)
B) increasing: [0, ∞); decreasing (–∞, 0]
C) increasing: never; decreasing: (–∞, ∞)
D) increasing: (–∞, ∞); decreasing: never

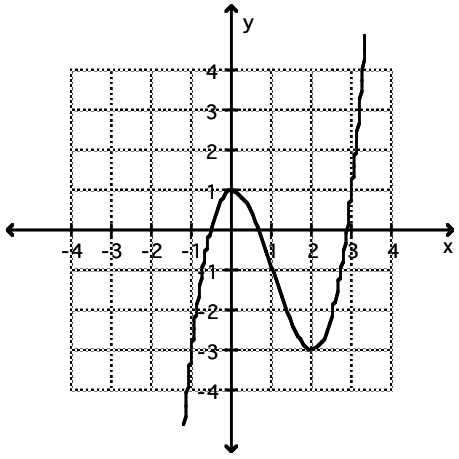
42) 42) _____



A) increasing: (−∞, −4]; decreasing [−4, ∞)
B) increasing: (−∞, ∞); decreasing: never
C) increasing: [−4, ∞); decreasing (−∞, −4]
D) increasing: (−∞, 0]; decreasing [0, ∞)

Use the graph of the given function to find any relative maxima and relative minima.

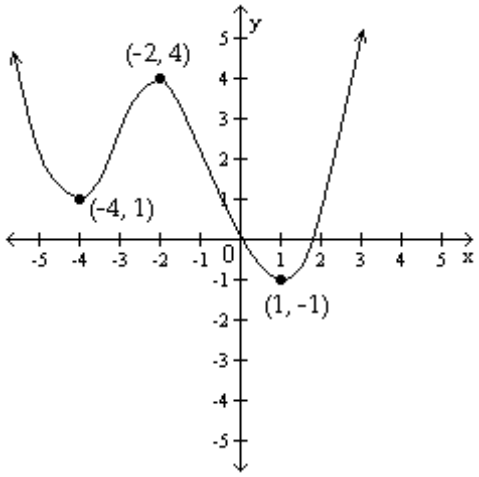
43) $f(x) = x^3 - 3x^2 + 1$ 43) _____



A) maximum: (0, 1); minimum: none
B) no maximum or minimum
C) maximum: (0, 1); minimum: (2, −3)
D) maximum: none; minimum: (2, −3)

Locate relative maximum and relative minimum points on the graph. State whether each relative extremum point is a turning point.

44) 44) _____



A) (–2, 4) is a relative maximum. (–4, 1) and (1, –1) are relative minima points.
B) (–2, 4) is a relative maximum point and a turning point. (1, –1) is a relative minimum point and a turning point.
C) (–2, 4) is a relative maximum point and a turning point. (–4, 1) and (1, –1) are relative minima points and turning points.
D) (–2, 4) is a relative maximum and a turning point. (–4, 1) is a relative minimum point and a turning point.

For the pair of functions, find the indicated sum, difference, product, or quotient.

45) $f(x) = 2 - 4x$, $g(x) = -7x^2 + 4$ 45) _____
Find $(f + g)(x)$.
A) $-7x^2 - 4x + 6$ B) $-7x^2 + 2$ C) $-11x^2 - 4x + 6$ D) $-11x + 6$

46) $f(x) = 2x + 9$, $g(x) = 6x + 1$ 46) _____
Find $(fg)(x)$.
A) $8x^2 + 56x + 10$ B) $12x^2 + 56x + 9$
C) $12x^2 + 9$ D) $12x^2 + 55x + 9$

47) $f(x) = \sqrt{5x + 5}$, $g(x) = \frac{1}{x}$ 47) _____
Find $\left(\frac{f}{g}\right)(x)$.
A) $x\sqrt{5x + 5}$ B) $\frac{x}{\sqrt{5x + 5}}$ C) $\frac{1}{x\sqrt{5x + 5}}$ D) $\frac{\sqrt{5x + 5}}{x}$

For the given functions f and g, find the requested function and state its domain.

48) $f(x) = 7x - 5$; $g(x) = 9x - 7$ 48) _____
Find $f - g$.
A) $(f - g)(x) = -2x - 12$; $\{x \mid x \neq -6\}$ B) $(f - g)(x) = 2x - 2$; all real numbers
C) $(f - g)(x) = 16x - 12$; $\{x \mid x \neq 1\}$ D) $(f - g)(x) = -2x + 2$; all real numbers

Evaluate.

49) Find $(f - g)(5)$ when $f(x) = -3x^2 - 2$ and $g(x) = x + 2$. 49) _____

A) -80 B) -74 C) -84 D) 72

50) Find $\left(\frac{f}{g}\right)(-2)$ when $f(x) = 4x - 7$ and $g(x) = 2x^2 + 14x + 3$. 50) _____

A) $-\frac{2}{17}$ B) $\frac{15}{17}$ C) 2 D) $-\frac{4}{17}$

51) Find $(fg)(3)$ when $f(x) = x - 4$ and $g(x) = -5x^2 + 13x - 7$. 51) _____

A) 13 B) -364 C) -41 D) -91

For the given functions f and g , find the indicated composition.

52) $f(x) = 6x + 13$, $g(x) = 5x - 1$ 52) _____

$(f \circ g)(x)$

A) $30x + 7$ B) $30x + 19$ C) $30x + 64$ D) $30x + 12$

53) $f(x) = 4x^2 + 5x + 6$, $g(x) = 5x - 8$ 53) _____

$(g \circ f)(x)$

A) $20x^2 + 25x + 38$ B) $20x^2 + 25x + 22$

C) $4x^2 + 25x + 22$ D) $4x^2 + 5x - 2$

54) $f(x) = \sqrt{x - 2}$, $g(x) = -\frac{8}{x}$ 54) _____

$(g \circ f)(x)$

A) $-\frac{8}{\sqrt{x - 2}}$ B) $\sqrt{-\frac{8}{x} - 2}$ C) $\frac{8}{\sqrt{-x - 2}}$ D) $-\frac{1}{\sqrt{8x - 2}}$

55) $f(x) = \frac{x - 9}{6}$, $g(x) = 6x + 9$ 55) _____

$(g \circ f)(x)$

A) $6x + 45$ B) $x + 18$ C) x D) $x - \frac{3}{2}$

Find the requested function value.

56) Find $(f \circ g)(-6)$ when $f(x) = -4x + 5$ and $g(x) = 5x^2 - 6x + 1$. 56) _____

A) -863 B) -28 C) 4032 D) -23

57) Find $(g \circ f)(-9)$ when $f(x) = \frac{x - 7}{8}$ and $g(x) = 5x + 6$. 57) _____

A) 78 B) $-\frac{23}{4}$ C) -4 D) -22

Find the requested value.

58) Using the given tables, find $(f \circ g)(5)$ 58) _____

x	15	11	7	9
f(x)	30	22	14	18

x	7	5	8	6
g(x)	13	9	15	11

A) 5 B) 22 C) 9 D) 18

Consider the function h as defined. Find functions f and g so that $(f \circ g)(x) = h(x)$.

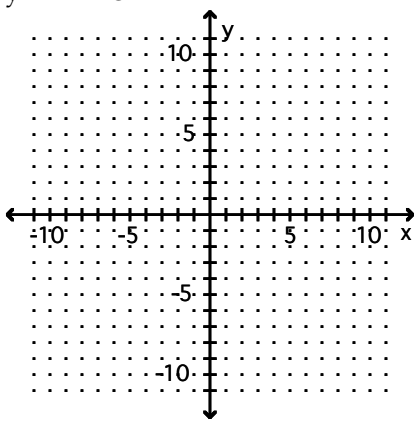
59) $h(x) = (8x - 2)^3$ 59) _____

A) $f(x) = 8x^3$, $g(x) = x - 2$ B) $f(x) = x^3$, $g(x) = 8x - 2$

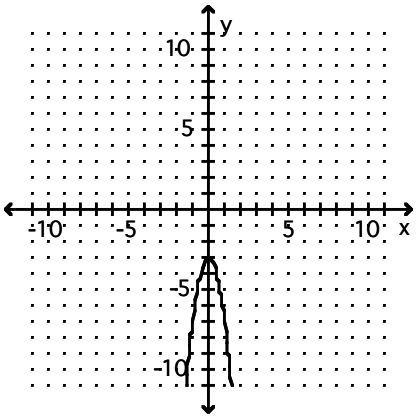
C) $f(x) = (8x)^3$, $g(x) = -2$ D) $f(x) = 8x - 2$, $g(x) = x^3$

Graph the function.

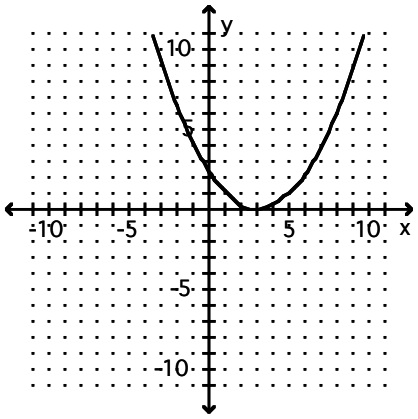
60) $y = 4x^2 + 3$ 60) _____



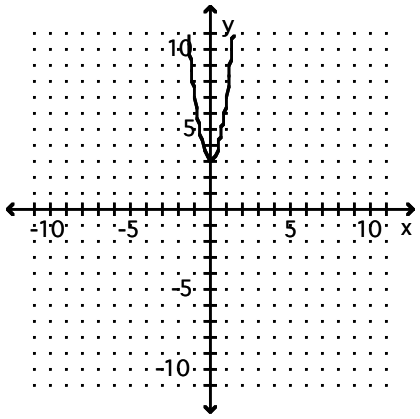
A)



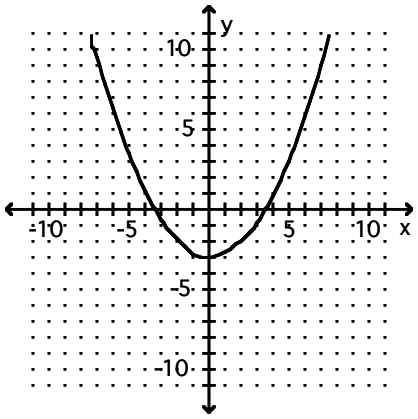
B)



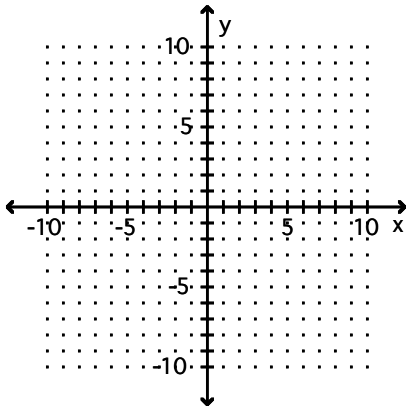
C)



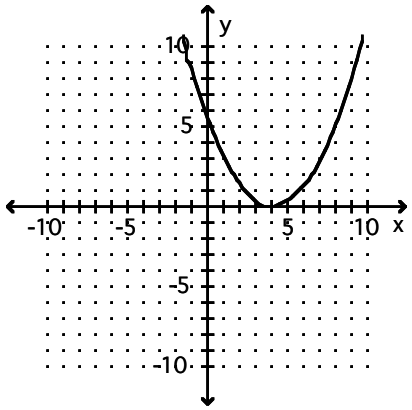
D)



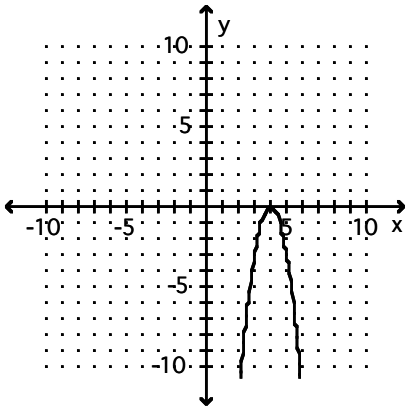
61) $y = \frac{1}{3}(x-4)^2$ 61) _____



A)



B)



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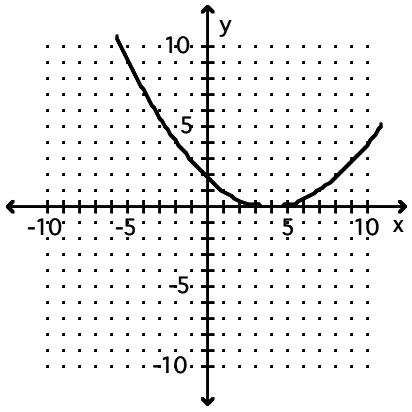
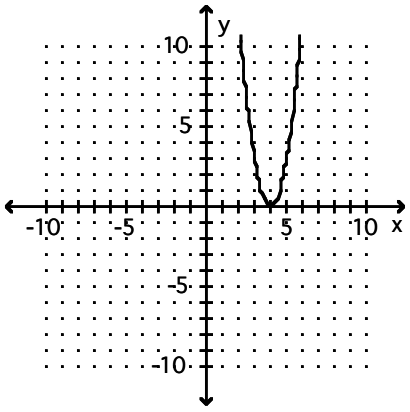
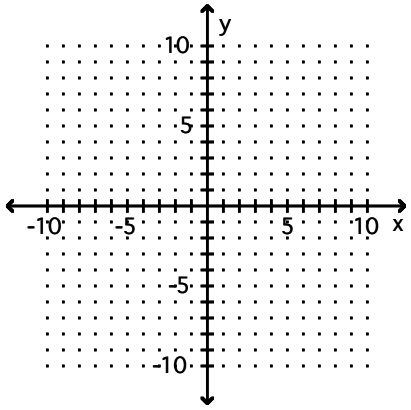


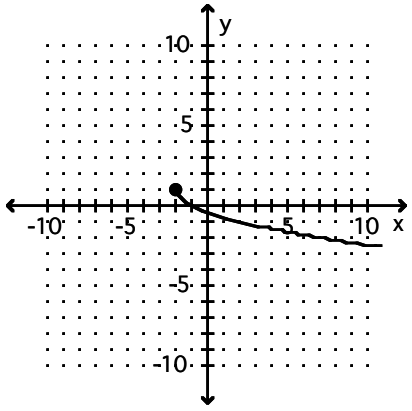
D)



62) $g(x) = -\sqrt{x+2} + 1$ 62) _____



A)



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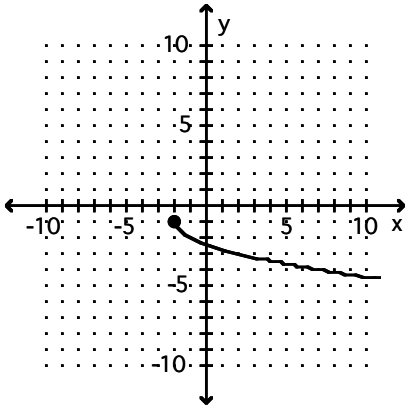

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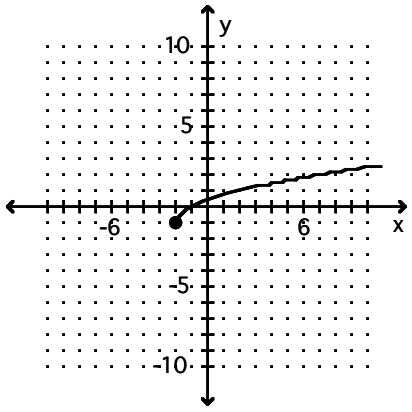
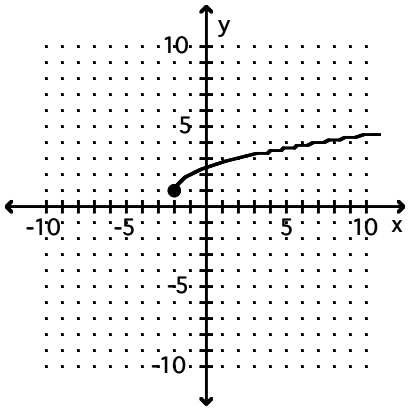
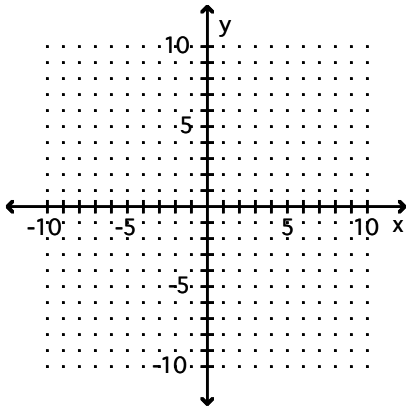


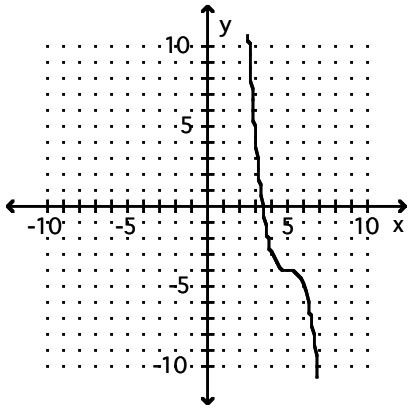
D)



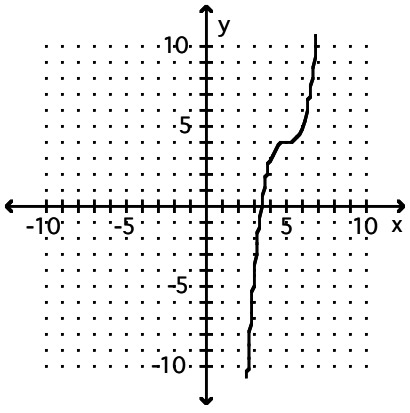
63) $g(x) = -(x-5)^3 + 4$ 63) _____



A)



B)



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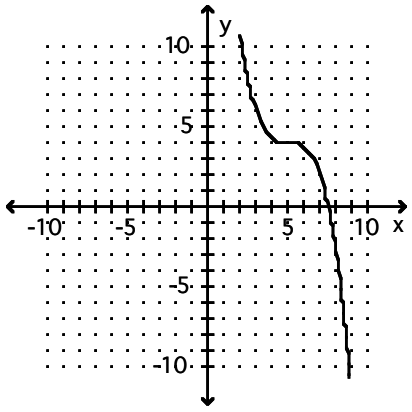

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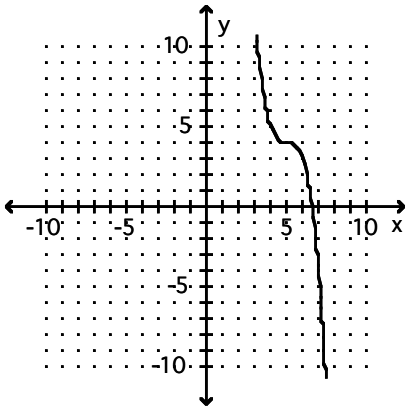
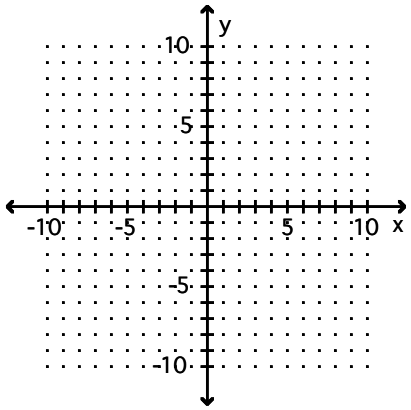
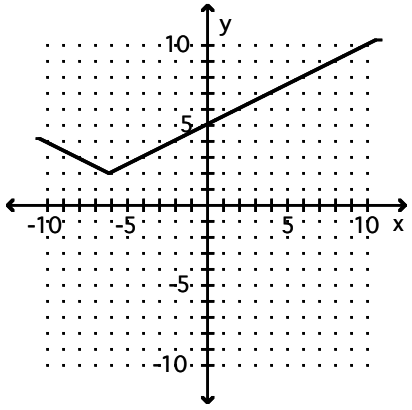


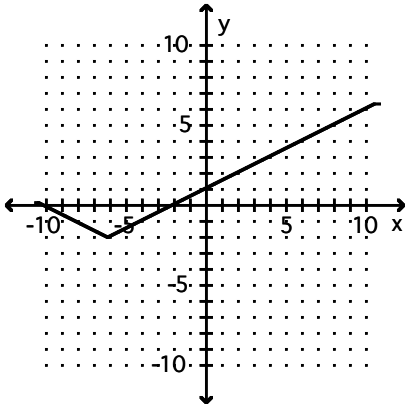
64) $g(x) = \frac{1}{2}|x + 6| + 2$ 64) _____



A)



B)



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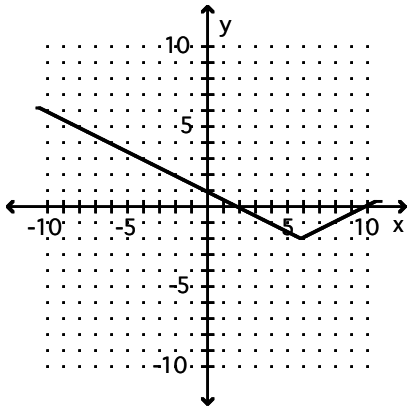
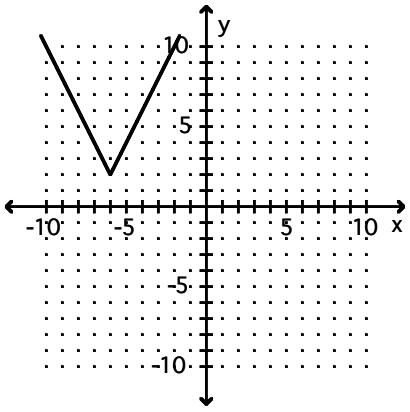
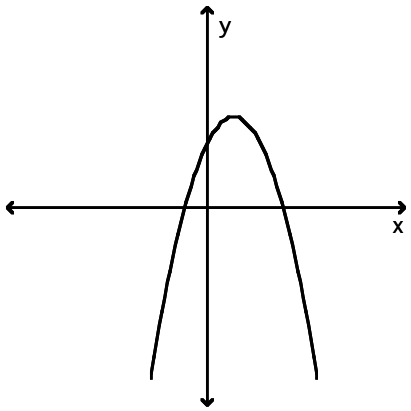


D)



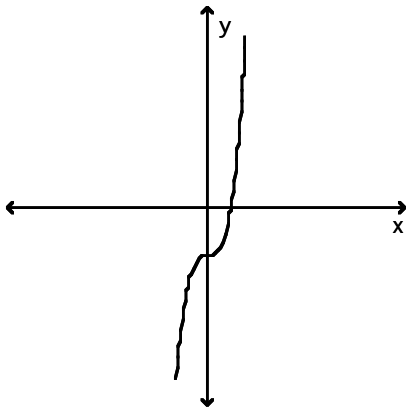
Does the graph represent a function that has an inverse function?

65) 

65) _____

A) Yes

B) No

66) 

66) _____

A) No

B) Yes

Find the inverse of the one–to–one function.

67) $f(x) = 2x + 7$

67) _____

A) $f^{-1}(x) = \frac{x + 7}{2}$

B) $f^{-1}(x) = \frac{y - 7}{2}$

C) $f^{-1}(x) = \frac{x - 7}{2}$

D) $f^{-1}(x) = \frac{2x - 7}{2}$

68) $f(x) = \frac{6x - 5}{7}$ 68) _____

A) $f^{-1}(x) = \frac{7}{6x + 5}$ B) $f^{-1}(x) = \frac{7x + 5}{6}$

C) $f^{-1}(x) = \frac{7}{6x - 5}$ D) $f^{-1}(x) = \frac{7x - 5}{6}$

Determine whether the given function is one–to–one. If it is one–to–one, find its inverse.

69) $f(x) = \sqrt[3]{x - 2}$ 69) _____

A) $f^{-1}(x) = (x - 2)^3$ B) $f^{-1}(x) = (x + 2)^3$

C) $f^{-1}(x) = x^3 + 2$ D) $f^{-1}(x) = \sqrt[3]{x} - 2$

If the function is one–to–one, find its inverse. If not, write "not one–to–one."

70) $f(x) = \frac{8}{x + 6}$ 70) _____

A) $f^{-1}(x) = \frac{6 + 8x}{x}$ B) $f^{-1}(x) = \frac{x}{6 + 8x}$

C) $f^{-1}(x) = \frac{-6x + 8}{x}$ D) not a one–to–one

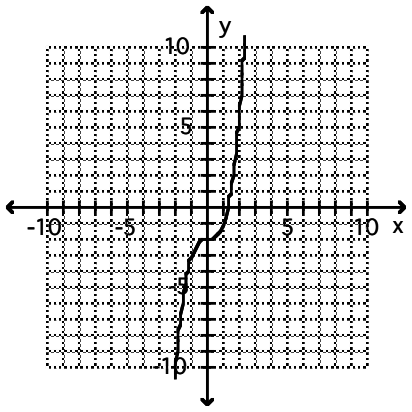
71) $f(x) = x^3 - 2$ 71) _____

A) $f^{-1}(x) = \sqrt[3]{x} + 2$ B) $f^{-1}(x) = \sqrt[3]{x - 2}$

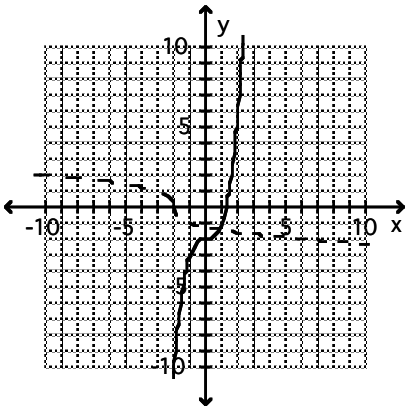
C) $f^{-1}(x) = \sqrt[3]{x + 2}$ D) not a one–to–one

Use the graph of f to draw the graph of its inverse function.

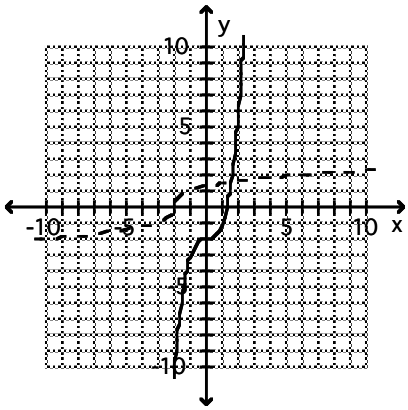
72) 72) _____



A)



B)



Solve the problem.

73) Linda needs to have her car towed. Little Town Auto charges a flat fee of $50 plus $2 per mile towed. Write a function expressing Linda's towing cost, c, in terms of miles towed, x. Find the cost of having a car towed 8 miles. 73) _____

A) $c(x) = 2x + 50$; $66

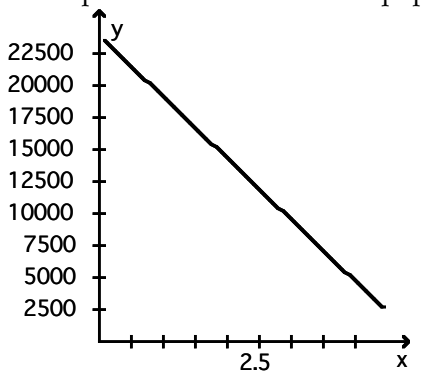
B) $c(x) = 2x$; $16

C) $c(x) = 2x$; $52

D) $c(x) = 2x + 50$; $56

Solve.

74) A school has just purchased new computer equipment for $24,000.00. The graph shows the depreciation of the equipment over 5 years. The point (0, 24,000) represents the purchase price and the point (5, 0) represents when the equipment will be replaced. Write a linear equation in slope–intercept form that models the value of the equipment, y, x years after purchase. Use the model to predict the value of the equipment after 2 years? 74) _____



A) $y = 24{,}000x + 5$;
value after 2 years is $14,400.00

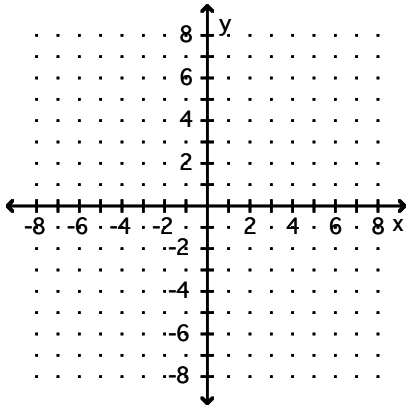
B) $y = -24{,}000x + 24{,}000$;
value after 2 years is $–24,000.00

C) $y = -4800x + 24{,}000$;
value after 2 years is $14,400.00;

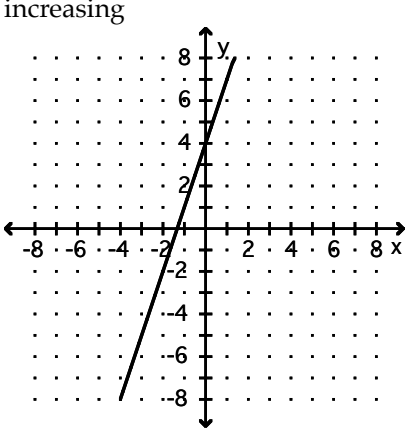
D) $y = 4800x - 24{,}000$;
value after 2 years is $14,400.00

Graph the function. State whether it is increasing, decreasing, or constant..

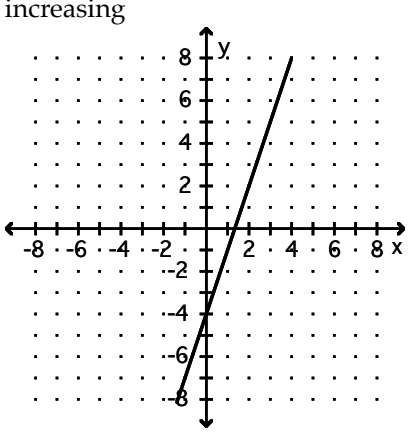
75) $h(x) = -3x + 4$ 75) _____



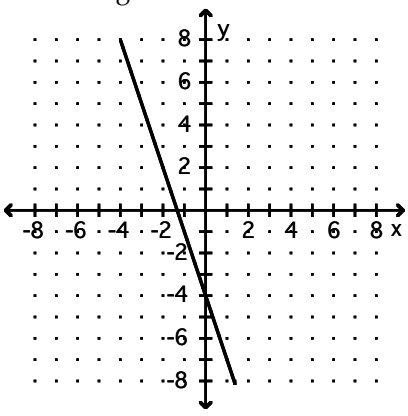
A) increasing



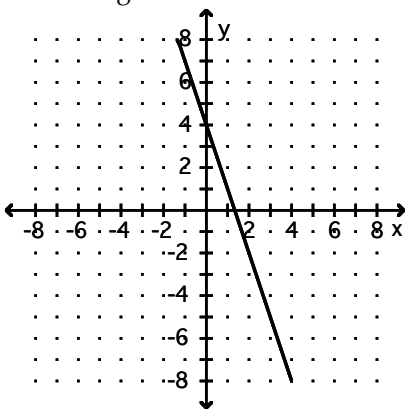
B) increasing



C) decreasing



D) decreasing



Use the given conditions to write an equation for the line in slope–intercept form.

76) Slope = –3, passing through (–4, 8) 76) _____

A) $y - 8 = -3x + 4$

B) $y = -3x + 4$

C) $y = -3x - 4$

D) $y - 8 = x + 4$

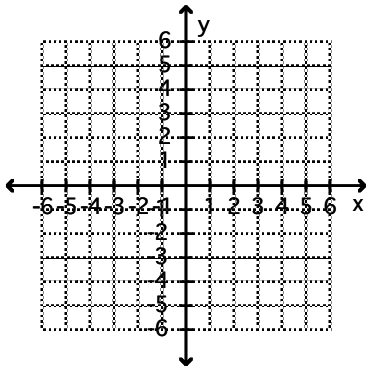
77) Passing through (4, –5) and (–1, 8) 77) _____

A) $y + 5 = -\frac{13}{5}(x - 4)$ B) $y = mx + \frac{27}{5}$

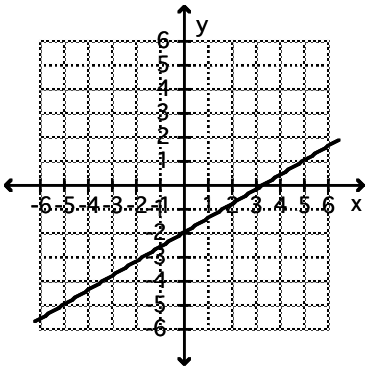
C) $y = -\frac{13}{5}x + \frac{27}{5}$ D) $y = \frac{13}{5}x + \frac{27}{5}$

Graph the line whose equation is given.

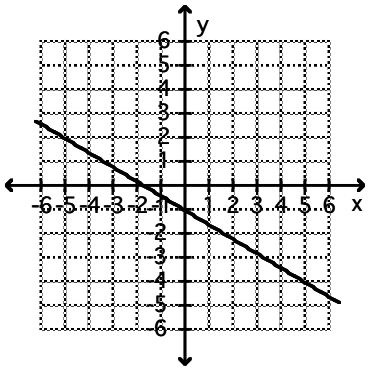
78) $y = -\frac{3}{5}x - 2$ 78) _____



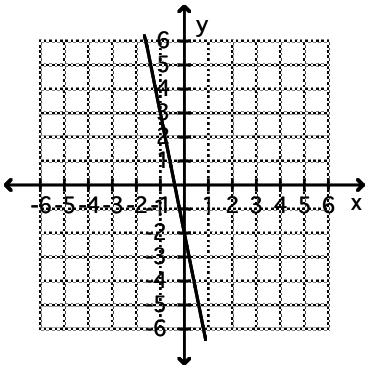
A)



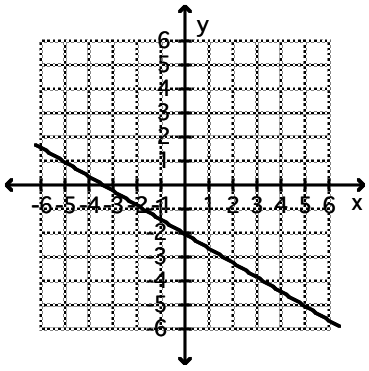
B)



C)



D)



Find an equation for the line with the given properties.

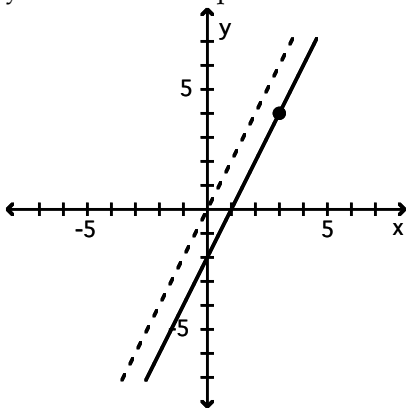
79) Parallel to the line $y = -2x$; containing the point (4, 5) 79) _____

A) $y = -2x - 13$ B) $y = -2x$ C) $y - 5 = -2x - 4$ D) $y = -2x + 13$

80) Perpendicular to the line $y = \frac{1}{3}x + 4$; containing the point (2, –4) 80) _____

A) $y = -3x + 2$ B) $y = -\frac{1}{3}x - \frac{2}{3}$ C) $y = -3x - 2$ D) $y = 3x - 2$

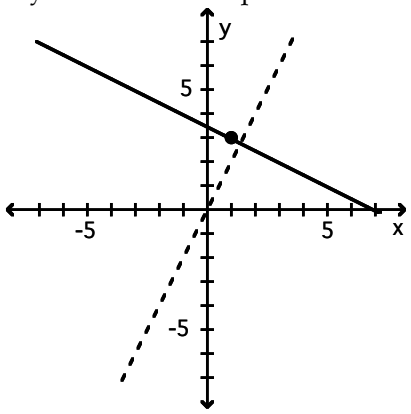
81) The solid line L contains the point (3, 4) and is parallel to the dotted line whose equation is $y = 2x$. Give the equation for the line L in slope–intercept form. 81) _____



A) $y = 2x - 2$ B) $y = 2x + b$

C) $y = 2x + 1$ D) $y - 4 = 2(x - 3)$

82) The solid line L contains the point (1, 3) and is perpendicular to the dotted line whose equation is $y = 2x$. Give the equation of line L in slope–intercept form. 82) _____



A) $y - 3 = -\frac{1}{2}(x - 1)$ B) $y = -\frac{1}{2}x + \frac{7}{2}$

C) $y - 3 = 2(x - 1)$ D) $y = \frac{1}{2}x + \frac{7}{2}$

Solve the problem.

83) If an object is dropped from a tower, then the velocity, V (in feet per second), of the object after t seconds can be obtained by multiplying t by 32 and adding 10 to the result. Find the function V(t) relating the velocity to the number of seconds, t. Use this function to find the velocity of the object at time $t = 2.2$ seconds. 83) _____

A) 80.4 ft/sec B) 81.7 ft/sec C) 79.7 ft/sec D) 78.4 ft/sec

84) A faucet is used to add water to a large bottle that already contained some water. After it has been filling for 3 seconds, the gauge on the bottle indicates that it contains 18 ounces of water. After it has been filling for 10 seconds, the gauge indicates the bottle contains 53 ounces of water. Let f(x) be the amount of water in the bottle x seconds after the faucet was turned on. Write a linear function that models the amount of water in the bottle in terms of x. 84) _____

A) $f(x) = \frac{1}{5}x + \frac{87}{5}$ B) $f(x) = -5x + 33$ C) $f(x) = 5x + 43$ D) $f(x) = 5x + 3$

85) Regrind, Inc. regrinds used typewriter platens. The variable cost per platen is $1.20. The total cost to regrind 50 platens is $500. Find the linear cost function to regrind platens. If reground platens sell for $10.20 each, how many must be reground and sold to break even? 85) _____

A) $C(x) = 1.20x + 500$; 44 platens B) $C(x) = 1.20x + 440$; 49 platens
C) $C(x) = 1.20x + 500$; 56 platens D) $C(x) = 1.20x + 440$; 39 platens

86) A lumber yard has fixed costs of $3568.40 per day and variable costs of $0.49 per board-foot produced. Lumber sells for $1.59 per board-foot. How many board-feet must be produced and sold daily to break even? 86) _____

A) 1715 board-feet B) 7282 board-feet
C) 2162 board-feet D) 3244 board-feet

87) Persons taking a 30-hour review course to prepare for a standardized exam average a score of 620 on that exam. Persons taking a 70-hour review course average a score of 794. Find a linear function S(t), which fits this data, and which expresses score as a function of time. 87) _____

A) $S(t) = 3.915t + 493.5$ B) $S(t) = 3.915t - 493.5$
C) $S(t) = 4.35t + 489.5$ D) $S(t) = -4.35t + 489.5$

88) Northwest Molded molds plastic handles which cost $0.90 per handle to mold. The fixed cost to run the molding machine is $2213 per week. If the company sells the handles for $1.90 each, how many handles must be molded and sold weekly to break even? 88) _____

A) 2458 handles B) 2213 handles
C) 790 handles D) 1475 handles

89) A vendor has learned that, by pricing caramel apples at $1.00, sales will reach 132 caramel apples per day. Raising the price to $2.00 will cause the sales to fall to 80 caramel apples per day. Let f(x) be the number of caramel apples the vendor sells at x dollars each. Write a linear function that models the number of caramel apples sold per day when the price is x dollars each. 89) _____

A) $f(x) = -52x + 184$ B) $f(x) = -\frac{1}{52}x + \frac{6863}{52}$

C) $f(x) = 52x + 80$ D) $f(x) = -52x - 184$

Write an equation for the linear function and use it to answer the given question.

90) Normaltown High School's pool record for the 100-yard freestyle was 47.8 in 1990. Assume that the record falls at a constant rate of 0.03 second per year. What does the model predict for the record in 2010? 90) _____

A) $R = 47.8t - 0.03$; 955.97 seconds B) $R = 47.8t + 0.03$; 956.03 seconds
C) $R = 47.8 + 0.03t$; 48.40 seconds D) $R = 47.8 - 0.03t$; 47.20 seconds

Solve the problem.

91) In 1880 the population of a midwest city was 19,000. By 1920 it had grown to 20,000. If it continues to grow at the same rate, what will the population be in 1939? Give your answer to the nearest whole number. 91) _____

A) 20,000 B) 20,475 C) 19,476 D) 21,000

Solve.

92) When making a telephone call using a calling card, a call lasting 5 minutes cost $1.70. A call lasting 14 minutes cost $3.95. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of a making a call lasting x minutes. 92) _____

A) $y = 0.25x - 10.05$ B) $y = 4x - \frac{183}{10}$

C) $y = 0.25x + 0.45$ D) $y = -0.25x + 2.95$

Write an equation for the linear function and use it to answer the given question.

93) You can rent time on computers at the local copy center for a $7 setup charge and an additional $4 for every 5 minutes. How much time can you rent for $16? 93) _____

A) $r = 7 - 0.8t$; 28.75 minutes B) $r = 7 + 0.8t$; 11.25 minutes
C) $r = 7t + 0.8$; 2.17 minutes D) $r = 7t - 0.8$; 2.4 minutes

Solve the problem.

94) Regrind, Inc. regrinds used typewriter platens. The variable cost per platen is $1.10. The total cost to regrind 90 platens is $300. Find the linear cost function to regrind platens. If reground platens sell for $10.80 each, how many must be reground and sold to break even? 94) _____

A) $C(x) = 1.10x + 201$; 21 platens B) $C(x) = 1.10x + 300$; 31 platens
C) $C(x) = 1.10x + 201$; 17 platens D) $C(x) = 1.10x + 300$; 26 platens

95) A lumber yard has fixed costs of $4700.80 per day and variable costs of $0.52 per board-foot produced. Lumber sells for $2.12 per board-foot. How many board-feet must be produced and sold daily to break even? 95) _____

A) 1958 board-feet B) 1780 board-feet
C) 9040 board-feet D) 2938 board-feet

96) Northwest Molded molds plastic handles which cost $0.10 per handle to mold. The fixed cost to run the molding machine is $2442 per week. If the company sells the handles for $1.10 each, how many handles must be molded and sold weekly to break even? 96) _____

A) 2442 handles B) 2034 handles
C) 24,420 handles D) 1628 handles

Write an equation for the linear function and use it to answer the given question.

97) Normaltown High School's pool record for the 100-yard freestyle was 47.9 in 1990. Assume that the record falls at a constant rate of 0.07 second per year. What does the model predict for the record in 2014? 97) _____

A) $R = 47.9 - 0.07t$; 46.22 seconds B) $R = 47.9 + 0.07t$; 49.58 seconds
C) $R = 47.9t - 0.07$; 1149.53 seconds D) $R = 47.9t + 0.07$; 1149.67 seconds

98) You can rent time on computers at the local copy center for a $7 setup charge and an additional $2 for every 10 minutes. How much time can you rent for $23? 98) _____

A) $r = 7 - 0.2t$; 150 minutes
B) $r = 7t - 0.2$; 3.31 minutes
C) $r = 7t + 0.2$; 3.26 minutes
D) $r = 7 + 0.2t$; 80 minutes

Solve.

99) When making a telephone call using a calling card, a call lasting 6 minutes cost $1.70. A call lasting 16 minutes cost $3.70. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of a making a call lasting x minutes. 99) _____

A) $y = 0.2x - 12.3$
B) $y = -0.2x + 2.9$
C) $y = 5x - \frac{283}{10}$
D) $y = 0.2x + 0.5$

Solve the problem.

100) Persons taking a 30-hour review course to prepare for a standardized exam average a score of 620 on that exam. Persons taking a 70-hour review course average a score of 740. Find a linear function S(t), which fits this data, and which expresses score as a function of time. 100) _____

A) $S(t) = 2.7t + 534$
B) $S(t) = 3t + 530$
C) $S(t) = -3t + 530$
D) $S(t) = 2.7t - 534$

1) C
2) A
3) C
4) A
5) B
6) A
7) A
8) A
9) B
10) A
11) D
12) C
13) B
14) C
15) C
16) A
17) B
18) B
19) A
20) D
21) B
22) A
23) B
24) B
25) B
26) D
27) A
28) D
29) C
30) B
31) C
32) C
33) D
34) D
35) A
36) D
37) C
38) B
39) C
40) D
41) D
42) A
43) C
44) C
45) A
46) B
47) A
48) D
49) C

50) B
51) A
52) A
53) B
54) A
55) C
56) A
57) C
58) D
59) B
60) C
61) A
62) A
63) D
64) A
65) B
66) B
67) C
68) B
69) C
70) C
71) C
72) B
73) A
74) C
75) D
76) C
77) C
78) D
79) D
80) A
81) A
82) B
83) A
84) D
85) B
86) D
87) C
88) B
89) A
90) D
91) B
92) C
93) B
94) A
95) D
96) A
97) A
98) D

99) D
100) B